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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/775,214

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Shafiq Pirbhai

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EXAMINER

JAKOVAC, RYAN J

ART UNIT

PAPER NUMBER

2445

MAIL DATE

DELIVERY MODE

12/18/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/775,214	Applicant(s) PIRBHAI ET AL.	
	Examiner RYAN J. JAKOVAC	Art Unit 2445	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 October 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 and 18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16, 18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed 10/16/2008 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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4. Claims 1-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over RFC2547bis - BGP/MPLS IP VPSs (hereinafter RFC2547bis) in view of RFC1771 – A Border Gateway Protocol 4 (hereinafter RFC1771).

Regarding claim 1, 5, 6, 10, the combination of RFC2547bis and RFC1771 teaches a method of managing virtual routing forwarding (VRF) tables at a provider edge PE router of a L3 virtual private network (VPN), said PE router maintaining a VPN-IP master routing information base (RIB) and a sub-RIB for each said VRF table (RFC1771, pg. 6.), comprising the steps of: maintaining an import route target (ImpRT) tree comprising all ImpRT attributes currently configured on said PE router (RFC2547bis, pg. 6, PE routers contain routing information about the VPNs they are directly connected to. Pg. 9-10, PE routers maintain a number of separate forwarding tables. See also pg. 31.); modifying an ImpRTi attribute of a VRFi table (RFC2547bis, pg. 21, routes associated with route targets are distributed to VRF tables associated with the route target. See also, pg. 23, PE routers distribute routes to each other. See also, pg. 25); searching said ImpRT tree for a match to said ImpRTi attribute to identify a VRFm table having said ImpRTi attribute (RFC2547bis, pg. 7-12, 14, when an IP packet is received the destination IP address is searched for. The ingress VRF is identified and used for incoming packets.); performing a route refresh operation only when a match is not found (RFC1771, pg. 43-44, when a new route is received (i.e. not matched to an existing route), the route is updated to all other BGP speakers (i.e. route refresh).); and updating said VRFi table accordingly, using an association between each said VRF table and a respective sub-RIB (RFC2547bis, pg. 21, VRF tables are updated with route target attributes.).

It would have been obvious to one of ordinary skill in the art at the time of invention to combine performing a route refresh operation only when a match is not found as taught by RFC1771 with the method of RFC2547bis in order to provide internal updates (RFC1771, pg. 43-44) and since RFC2547bis is concerned with route distribution among PEs by BGP and RFC1771 details known methods of route distribution using BGP.

Regarding claim 2, the combination of RFC2547bis and RFC1771 teaches the method of claim 1, wherein said ImpRT tree maintains a list of all ImpRT attributes at a PE node, each ImpRT attribute being associated with all VRF tables that are currently configured with said ImpRT attribute (RFC2547bis, pg. 6, PE routers contain routing information about the VPNs they are directly connected to. Pg. 9-10, PE routers maintain a number of separate forwarding tables.).

Regarding claim 3, 8, the combination of RFC2547bis and RFC1771 teaches the method of claim 1, wherein said step of modifying comprises adding said ImpRTi attribute to said VRFi table (RFC2547bis, pg. 20, routes are imported (i.e. added) into VRF tables.).

Regarding claim 4, the combination of RFC2547bis and RFC1771 teaches the method of claim 3, wherein said step of updating comprises copying all routes Rm from said VRFm table into said VRFi table, whenever said VRFm table is found in said ImpRT tree (RFC2547bis, pg. 22, 25, PE router installs route when a VRF with an identical import target exists.).

Regarding claim 7, the combination of RFC2547bis and RFC1771 teaches the method of claim 4, further comprising: searching for said routes R_m in a sub-RIB_m associated with said VRF_m table; and copying said routes R_m from said sub-RIB_m into said VRF_i table based on all route target attributes configured for said VRF_i table, including said added ImpRT_i attribute (RFC2547bis, pg. 20, routes are imported (i.e. added) into VRF tables, see also pg. 22-25.).

Regarding claim 9, the combination of RFC2547bis and RFC1771 teaches the method of claim 2, wherein said step of searching is performed through said master RIB (RFC1771, pg. 43-44, see also pg. 5-7.).

Regarding claim 11-14, the combination of RFC2547bis and RFC1771 teaches the method of claim 1, wherein said step of modifying comprises removing said import route target ImpRT_i from said VRF_i table (RFC2547bis, pg. 25, the PE discards all the routes which no longer have any of the PE's VRF's import targets as one of their route target attributes. See also, RFC1771, pg. 36, withdrawal of routes.).

Regarding claim 9, the combination of RFC2547bis and RFC1771 teaches the method of claim 1, further comprising: maintaining at said PE router a rejected routes tree comprised of routes that were not accepted during ImpRT filtering, wherein said step of searching is also performed on said rejected routes tree (RFC2547bis, pg. 25.).

5. Claims 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over RFC2547bis in view of RFC1771 and further in view of US 7,139,838 to Squire et al (hereinafter Squire).

Regarding claim 16, 18, the combination of RFC2547bis and RFC1771 teaches at a provider edge PE router, a tree data structure, stored on a computer-readable storage medium, comprising, for each import route target ImpRT attribute configured on said PE router (RFC2547bis, pg. 6, PE routers contain routing information about the VPNs they are directly connected to. Pg. 9-10, PE routers maintain a number of separate forwarding tables. See also pg. 31.), and an association between each said VRF table and a respective sub-RIB (RFC1771, pg. 6.), wherein a route refresh operation is performed only if a match between a modified ImpRT attribute and an attribute stored in the VRF table is not found (RFC1771, pg. 43-44, when a new route is received (i.e. not matched to an existing route), the route is updated to all other BGP speakers (i.e. route refresh).). Squire discloses a pointer to a virtual routing forwarding table having said respective ImpRT attribute (Squire, Col. 4, line 55-67, Each network device maintains a database. Pointers are used in the database storing the routing information to separate information.).

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine a pointer to a virtual routing forwarding table having said respective ImpRT attribute as taught by Squire with the method of RFC2547bis and RFC1771 (as described above) in order to divide stored information into distinct pairs, for example, routing information from inbound update messages (Squire, col. 4, line 55-67.).

Response to Arguments

6. Applicant's arguments with respect to claims 1-16 and 18 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RYAN J. JAKOVAC whose telephone number is (571)270-5003. The examiner can normally be reached on Monday through Friday, 7:30 am to 5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenton B. Burgess can be reached on (571) 272-3949. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/RJ/

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/Larry D Donaghue/

Primary Examiner, Art Unit 2454